FIG. 1

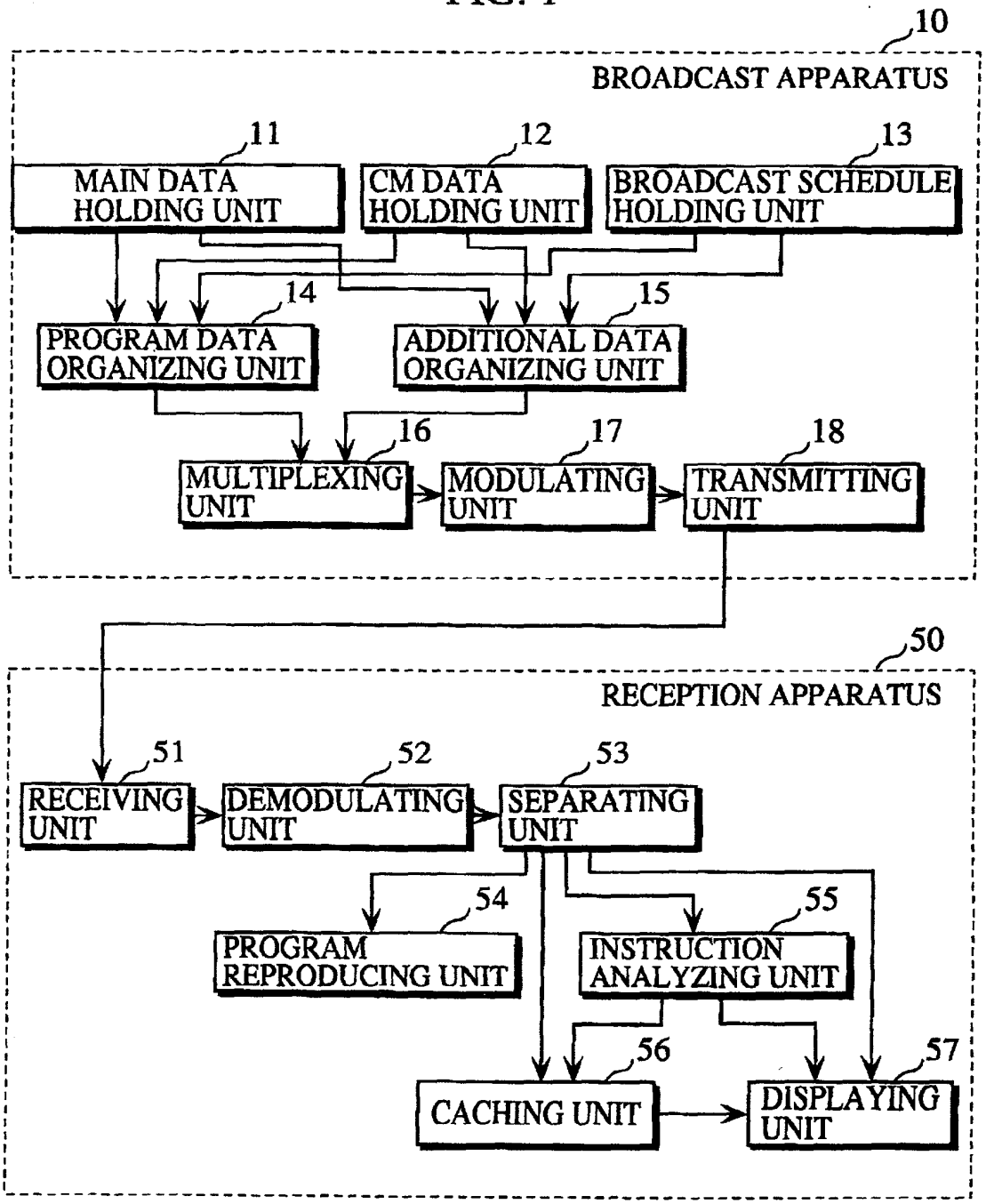

10
BROADCAST APPARATUS
11
MAIN DATA HOLDING UNIT
12
CM DATA HOLDING UNIT
13
BROADCAST SCHEDULE HOLDING UNIT
14
PROGRAM DATA ORGANIZING UNIT
15
ADDITIONAL DATA ORGANIZING UNIT
16
MULTIPLEXING UNIT
17
MODULATING UNIT
18
TRANSMITTING UNIT
50
RECEPTION APPARATUS
51
RECEIVING UNIT
52
DEMODULATING UNIT
53
SEPARATING UNIT
54
PROGRAM REPRODUCING UNIT
55
INSTRUCTION ANALYZING UNIT
56
CACHING UNIT
57
DISPLAYING UNIT

FIG. 2

BROADCAST DATE	CHANNEL CODE	BROADCAST START TIME	BROADCAST END TIME	PROGRAM MANAGEMENT CODE	PROGRAM TITLE	ADDITIONAL DATA MANAGEMENT CODE	ADDITIONAL DATA TITLE
2000/ 5/1	10	6 : 00 : 00	6 : 00 : 30	C1001	CM A	CA1001	CMA A
		6 : 00 : 30	6 : 01 : 00	C1002	CM B	CA1002	CMA B
		6 : 01 : 00	6 : 02 : 00	C1007	CM G	CA1007	CMA G
		6 : 02 : 00	6 : 13 : 00	M1001-1	MP A-1	MA1001	MPA A
		6 : 13 : 00	6 : 13 : 30	C1001	CM A	CA1001	CMA A
		6 : 13 : 30	6 : 14 : 00	C1002	CM B	CA1002	CMA B
		6 : 14 : 00	6 : 15 : 00	C1008	CM H	CA1008	CMA H
		6 : 15 : 00	6 : 28 : 00	M1001-2	MP A-2	MA1001	MPA A
		6 : 28 : 00	6 : 28 : 30	C1001	CM A	CA1001	CMA A
		6 : 28 : 30	6 : 29 : 00	C1002	CM B	CA1002	CMA B
		6 : 29 : 00	6 : 30 : 00	C1006	CM F	CA1006	CMA F
		.	.	.	.	.	.
		.	.	.	.	.	.
		.	.	.	.	.	.
	11	6 : 00 : 00	6 : 00 : 15	C1003	CM C	CA1003	CMA C
		.	.	.	.	.	.
		.	.	.	.	.	.
		.	.	.	.	.	.

201
202
207
203
204
208
205
206

FIG. 3

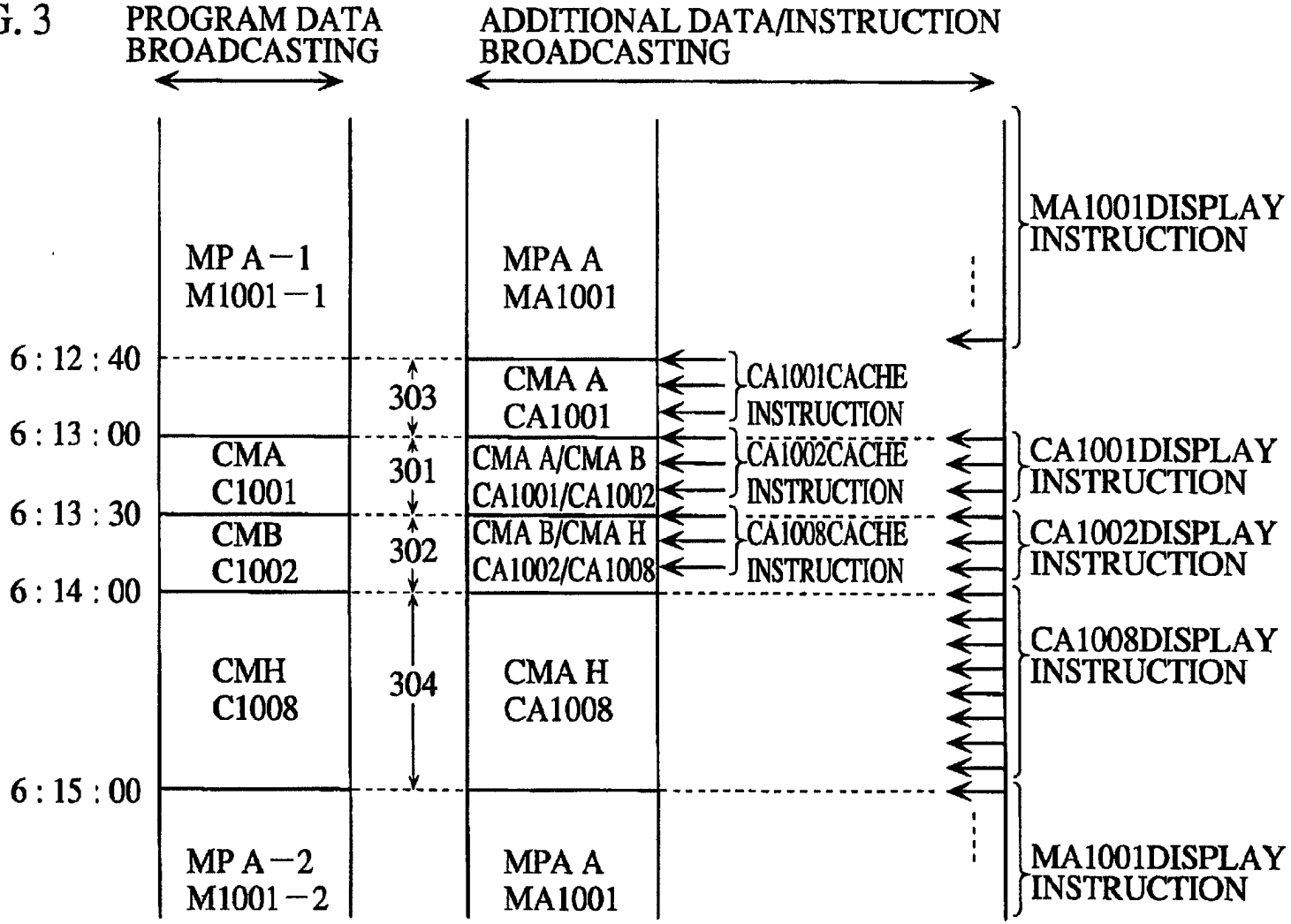

PROGRAM DATA BROADCASTING
ADDITIONAL DATA/INSTRUCTION BROADCASTING
MP A−1 M1001−1
MPA A MA1001
MA1001DISPLAY INSTRUCTION
6 : 12 : 40
303
CMA A CA1001
CA1001CACHE INSTRUCTION
6 : 13 : 00
CMA C1001
301
CMA A/CMA B CA1001/CA1002
CA1002CACHE INSTRUCTION
CA1001DISPLAY INSTRUCTION
6 : 13 : 30
CMB C1002
302
CMA B/CMA H CA1002/CA1008
CA1008CACHE INSTRUCTION
CA1002DISPLAY INSTRUCTION
6 : 14 : 00
CMH C1008
304
CMA H CA1008
CA1008DISPLAY INSTRUCTION
6 : 15 : 00
MP A−2 M1001−2
MPA A MA1001
MA1001DISPLAY INSTRUCTION

FIG. 4

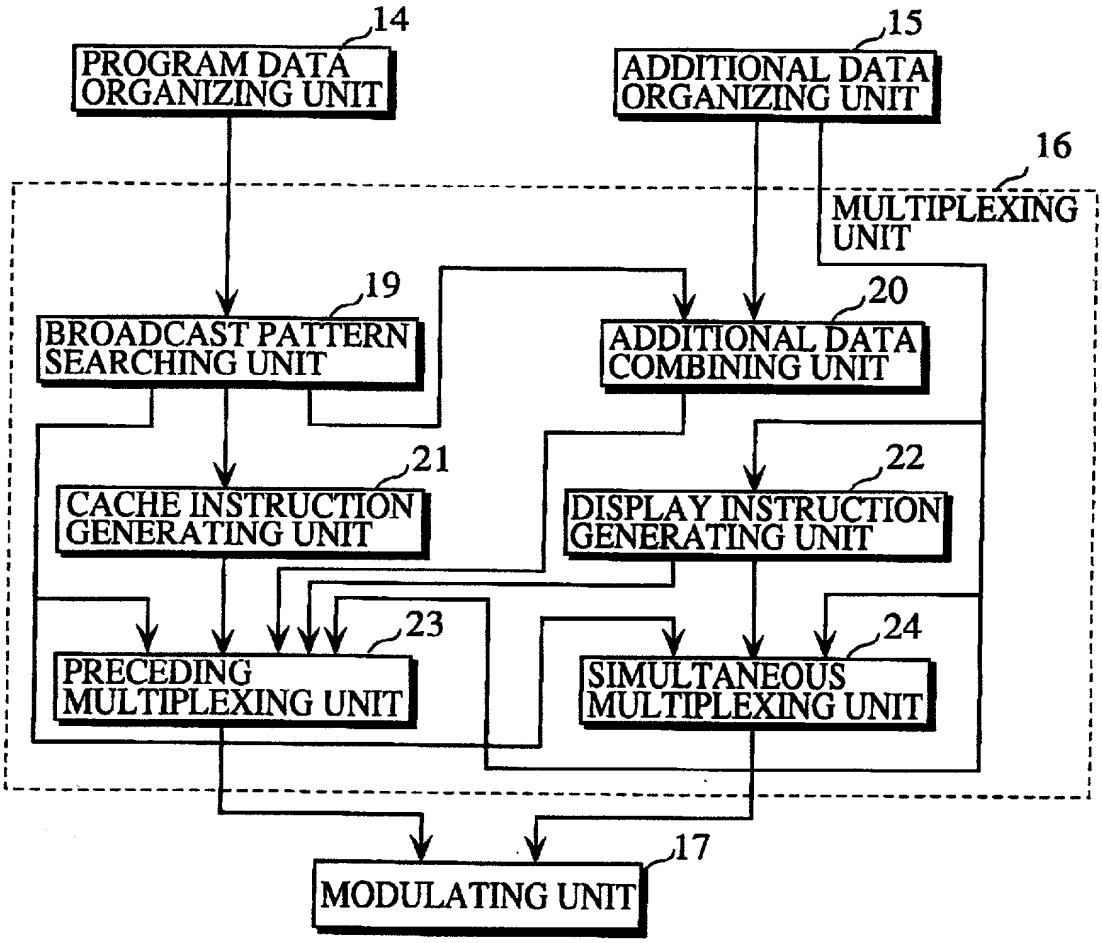

14
PROGRAM DATA ORGANIZING UNIT
15
ADDITIONAL DATA ORGANIZING UNIT
16
MULTIPLEXING UNIT
19
BROADCAST PATTERN SEARCHING UNIT
20
ADDITIONAL DATA COMBINING UNIT
21
CACHE INSTRUCTION GENERATING UNIT
22
DISPLAY INSTRUCTION GENERATING UNIT
23
PRECEDING MULTIPLEXING UNIT
24
SIMULTANEOUS MULTIPLEXING UNIT
17
MODULATING UNIT

FIG. 5

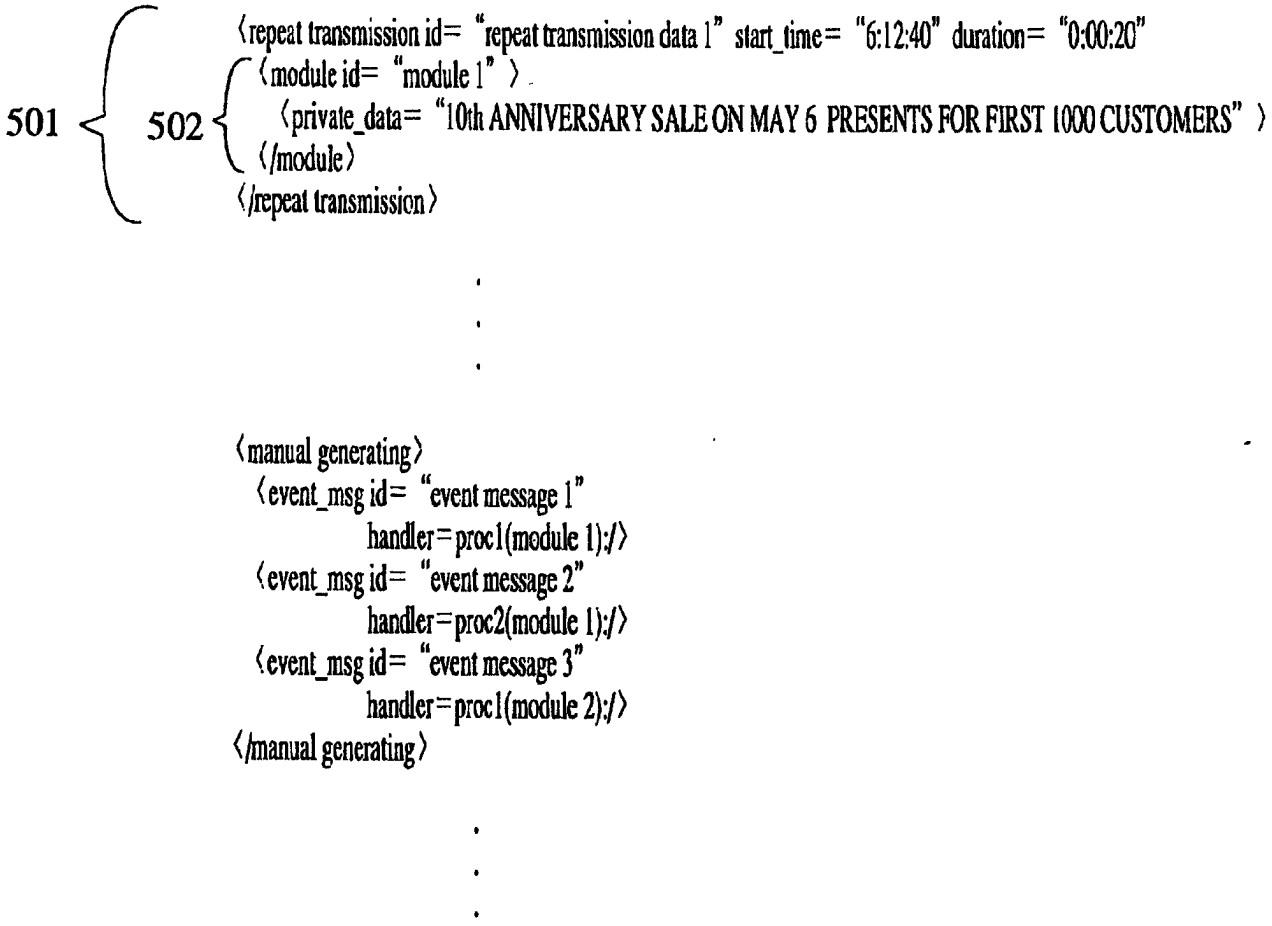

501
502
〈repeat transmission id= "repeat transmission data 1" start_time= "6:12:40" duration= "0:00:20"
〈module id= "module 1" 〉
〈private_data= "10th ANNIVERSARY SALE ON MAY 6 PRESENTS FOR FIRST 1000 CUSTOMERS" 〉
〈/module〉
〈/repeat transmission〉
〈manual generating〉
〈event_msg id= "event message 1"
handler=proc1(module 1):/〉
〈event_msg id= "event message 2"
handler=proc2(module 1):/〉
〈event_msg id= "event message 3"
handler=proc1(module 2):/〉
〈/manual generating〉

FIG. 6

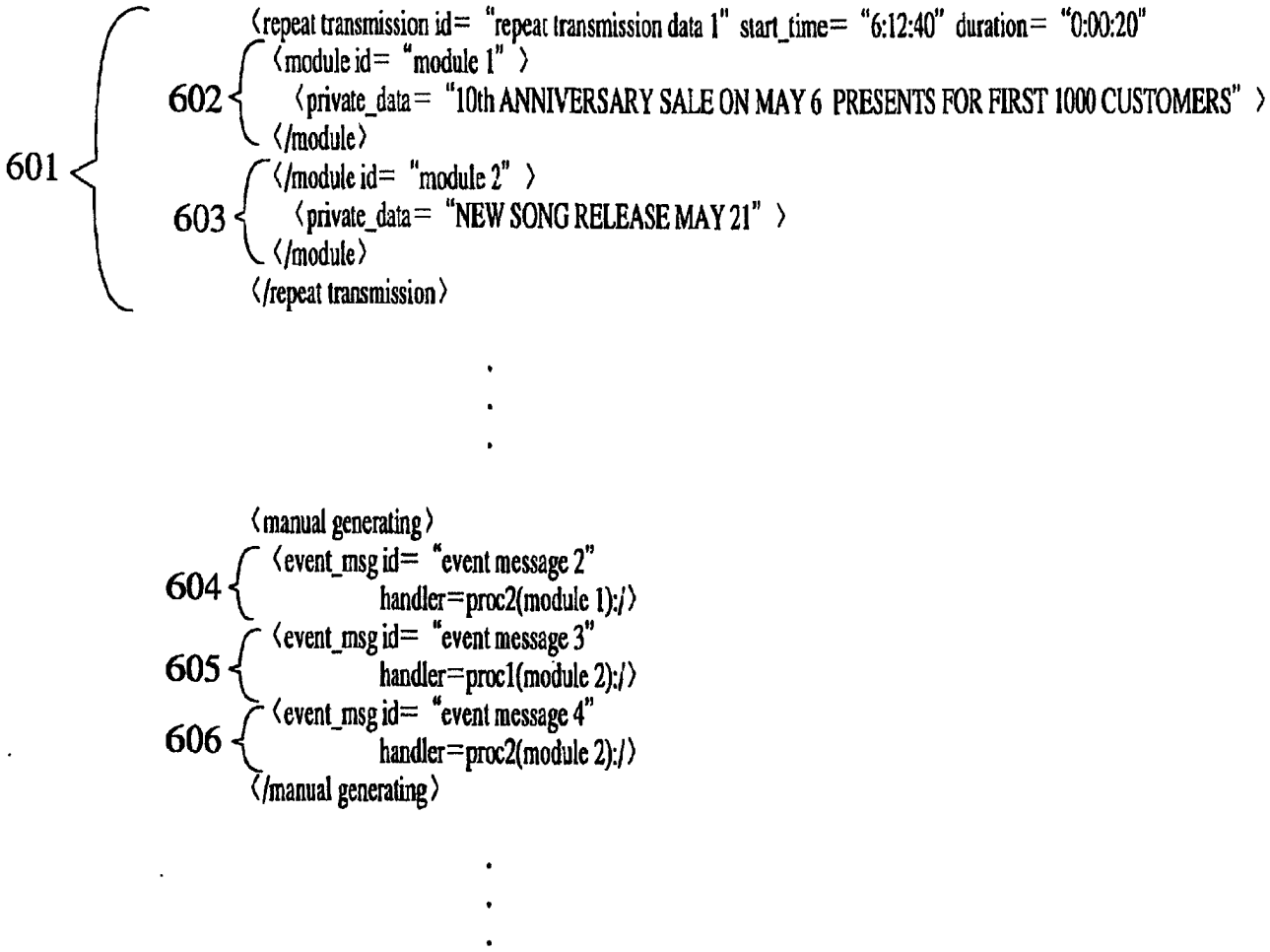

601
602
603
604
605
606
〈repeat transmission id= "repeat transmission data 1" start_time= "6:12:40" duration= "0:00:20"
〈module id= "module 1" 〉
〈private_data= "10th ANNIVERSARY SALE ON MAY 6 PRESENTS FOR FIRST 1000 CUSTOMERS" 〉
〈/module〉
〈/module id= "module 2" 〉
〈private_data= "NEW SONG RELEASE MAY 21" 〉
〈/module〉
〈/repeat transmission〉
〈manual generating〉
〈event_msg id= "event message 2"
handler=proc2(module 1):/〉
〈event_msg id= "event message 3"
handler=proc1(module 2):/〉
〈event_msg id= "event message 4"
handler=proc2(module 2):/〉
〈/manual generating〉

FIG. 7

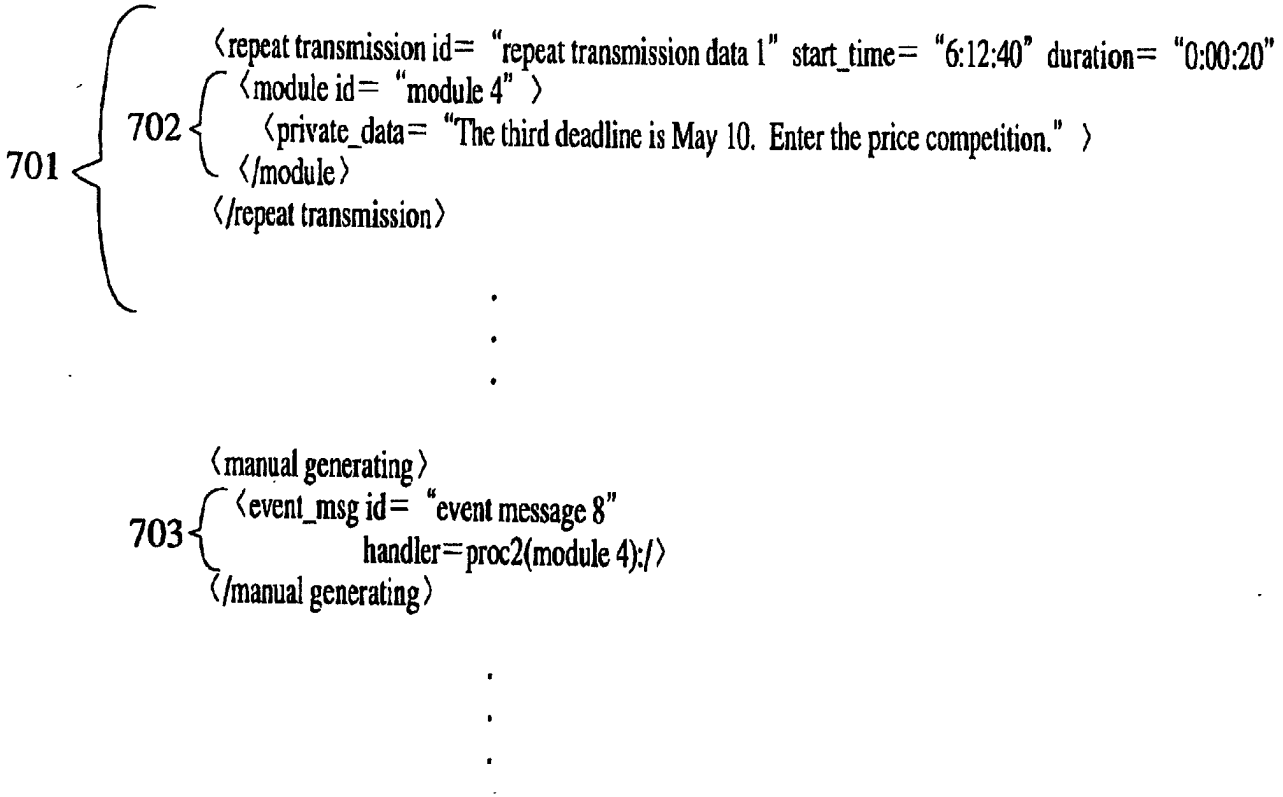

701
702
703
〈repeat transmission id= "repeat transmission data 1" start_time= "6:12:40" duration= "0:00:20"
〈module id= "module 4" 〉
〈private_data= "The third deadline is May 10. Enter the price competition." 〉
〈/module〉
〈/repeat transmission〉
〈manual generating〉
〈event_msg id= "event message 8"
handler=proc2(module 4):/〉
〈/manual generating〉

FIG. 8

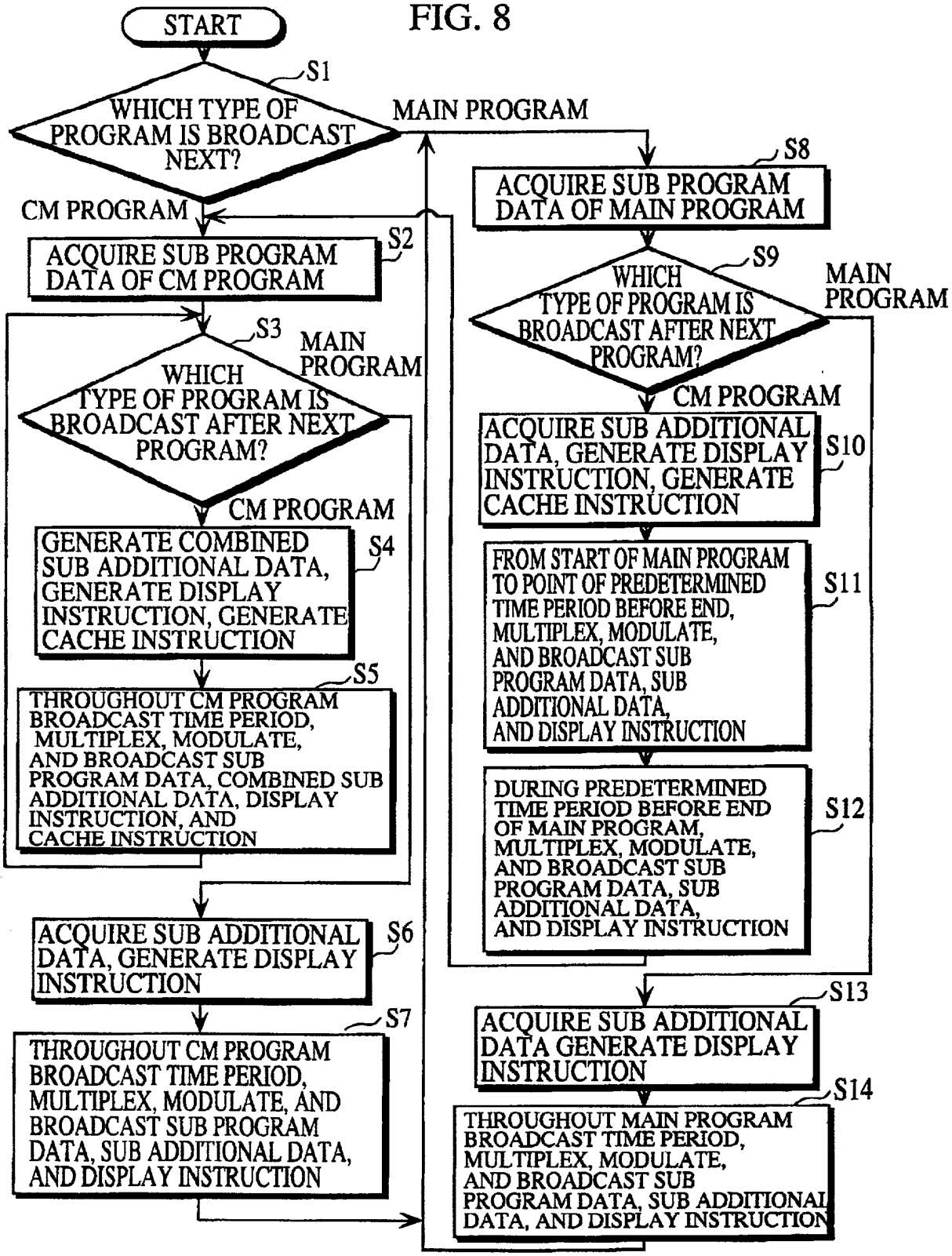
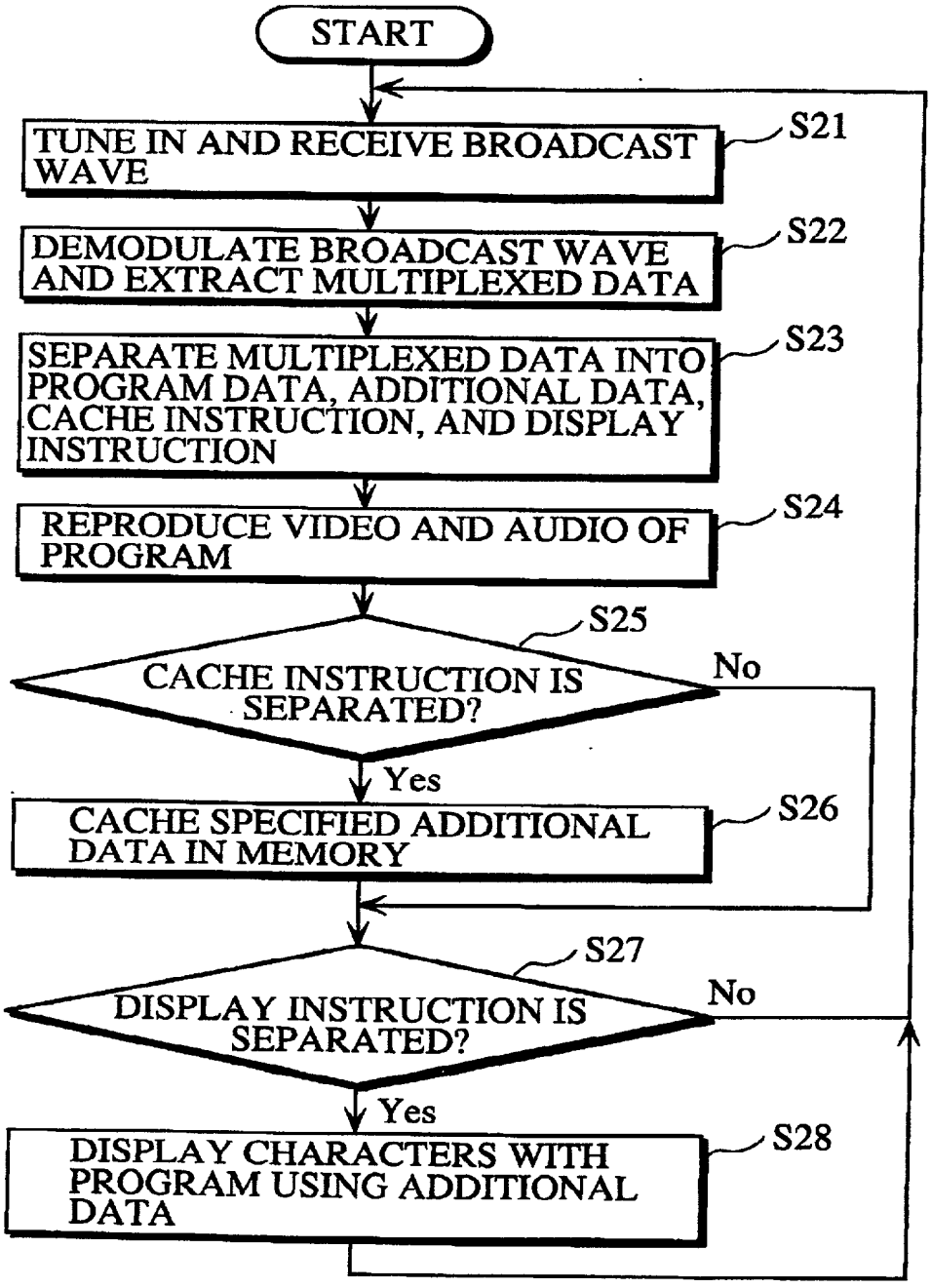

START
S1
WHICH TYPE OF PROGRAM IS BROADCAST NEXT?
MAIN PROGRAM
CM PROGRAM
S2
ACQUIRE SUB PROGRAM DATA OF CM PROGRAM
S3
WHICH TYPE OF PROGRAM IS BROADCAST AFTER NEXT PROGRAM?
MAIN PROGRAM
CM PROGRAM
S4
GENERATE COMBINED SUB ADDITIONAL DATA, GENERATE DISPLAY INSTRUCTION, GENERATE CACHE INSTRUCTION
S5
THROUGHOUT CM PROGRAM BROADCAST TIME PERIOD, MULTIPLEX, MODULATE, AND BROADCAST SUB PROGRAM DATA, COMBINED SUB ADDITIONAL DATA, DISPLAY INSTRUCTION, AND CACHE INSTRUCTION
S6
ACQUIRE SUB ADDITIONAL DATA, GENERATE DISPLAY INSTRUCTION
S7
THROUGHOUT CM PROGRAM BROADCAST TIME PERIOD, MULTIPLEX, MODULATE, AND BROADCAST SUB PROGRAM DATA, SUB ADDITIONAL DATA, AND DISPLAY INSTRUCTION
S8
ACQUIRE SUB PROGRAM DATA OF MAIN PROGRAM
S9
WHICH TYPE OF PROGRAM IS BROADCAST AFTER NEXT PROGRAM?
MAIN PROGRAM
CM PROGRAM
S10
ACQUIRE SUB ADDITIONAL DATA, GENERATE DISPLAY INSTRUCTION, GENERATE CACHE INSTRUCTION
S11
FROM START OF MAIN PROGRAM TO POINT OF PREDETERMINED TIME PERIOD BEFORE END, MULTIPLEX, MODULATE, AND BROADCAST SUB PROGRAM DATA, SUB ADDITIONAL DATA, AND DISPLAY INSTRUCTION
S12
DURING PREDETERMINED TIME PERIOD BEFORE END OF MAIN PROGRAM, MULTIPLEX, MODULATE, AND BROADCAST SUB PROGRAM DATA, SUB ADDITIONAL DATA, AND DISPLAY INSTRUCTION
S13
ACQUIRE SUB ADDITIONAL DATA GENERATE DISPLAY INSTRUCTION
S14
THROUGHOUT MAIN PROGRAM BROADCAST TIME PERIOD, MULTIPLEX, MODULATE, AND BROADCAST SUB PROGRAM DATA, SUB ADDITIONAL DATA, AND DISPLAY INSTRUCTION

FIG. 9


START
TUNE IN AND RECEIVE BROADCAST WAVE
S21
DEMODULATE BROADCAST WAVE AND EXTRACT MULTIPLEXED DATA
S22
SEPARATE MULTIPLEXED DATA INTO PROGRAM DATA, ADDITIONAL DATA, CACHE INSTRUCTION, AND DISPLAY INSTRUCTION
S23
REPRODUCE VIDEO AND AUDIO OF PROGRAM
S24
CACHE INSTRUCTION IS SEPARATED?
S25
No
Yes
CACHE SPECIFIED ADDITIONAL DATA IN MEMORY
S26
DISPLAY INSTRUCTION IS SEPARATED?
S27
No
Yes
DISPLAY CHARACTERS WITH PROGRAM USING ADDITIONAL DATA
S28